

Concept for Autonomous, Independent Drilling Units Leveraging Several Novel Technologies Capable of Exploring the Earth at Unprecedented Depths

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Introduction

In order to explore the mantle of the Earth, an untethered drilling unit must be able to do a number of things: Propel itself, cool itself, power itself, and have an indestructible drilling mechanism. It must furthermore be autonomous as the extreme depth would prohibit radio communication. It must, lastly, be capable of withstanding extreme pressures much as a submarine does.

Abstract

The requirement for autonomy is perhaps the most readily achieved with today's technology. The requirement for pressure-resistance is one that can be met using principles and methods that are already understood. Our craft would need to be in many ways like a DSRV with a thicker hull. One key difference is that the skin of that hull would have incorporated within it a solid-state cooling mechanism as well as electrically conductive components for controlling the unique drilling mechanism.

Our propulsive mechanism is, as you might guess, borrowed from one of my own publications sc. the one concerning photo-magnetic propulsion. This is one of those propulsion mechanisms when once you have it, you wonder why someone didn't think of it sooner as it is highly useful for virtually all propulsive applications: Space, air, sea (both under and upon) and even drilling deep into the Earth.

The most critical aspect of such a sub-terranean craft would have to be the mechanism for drilling. Even at ordinary temperatures, traditional drills wear out and need to be replaced. Just a few months ago, I described a mechanism to enhance existing ground-penetrating warheads. The essence of that mechanism should translate into a useful drilling mechanism with slight modification. As you will read, the per se drilling mechanism is useless without the propulsive mechanism and so the propulsive mechanism could be, in the abstract, considered part of the drilling mechanism. For my purposes, I am describing them separately. If you wish to learn more about photo-magnetic propulsion, please refer to the archived thread on that topic. For reference, the four primary steps in a photo-magnetic propulsive action are 1.) light Emission, 2.) polarity Uniforming, 3.) light Solitonization and 4.) Actuation (EUSA.)

At its most basic, the ground-penetrating mechanism calls for the object's skin to be coated with a thin layer of special C60 fullerene molecules with an iron atom embedded in the center of each. The skin of the penetrator would be an electromagnet that strongly acts upon the iron to prevent its attrition by friction. The energy requirement to counteract this friction would be non-

trivial and the limited duration for which this magnetic field must endure makes that particular proposal feasible. In the case of the FeC60-enhanced penetrator, the FeC60, being in constant motion and constantly seeking equilibrium, knocks debris out of the way, reducing effective friction with the Earth by blowing material out of the path of the warhead a few atoms at a time, much as explosives enable the free-fall of a building by moving material out of the way.

In the case of a drilling mechanism utilizing FeC60 as a cutting mechanism, the mechanism must operate at a lower and more sustainable power level for a much longer duration. This mechanism would in large part depend upon the application of pressure, much as is the case with screwdrivers and screws. Since FeC60 would cover only a few nanometers of thickness, the speed at which drilling could proceed would be quite slow, with progress working on the timescale of a space mission and not traditional drilling operations.

Another key difference in the case of FeC60 usage for drilling applications is that the magnetism applied to the skin of the drilling face of the unit would need to alternate to ensure constant motion of the FeC60 spheres. The effect would be nano-ablative, but speed would be at least partly dictated by the amount of force with which the photo-magnetic drive can push the unit into the Earth. If the cooling system is sufficiently effective, routing the craft through magma pockets so as to be able to "swim" rather than cut through much of the Earth may be more expedient. If sufficient cooling cannot be sustained for long stretches of time, magma pockets would need to be avoided and the slower drilling process would need to be entirely relied upon.

The most important thing is that the cutting mechanism never wear away or fail. The fact that the FeC60, itself, is the only moving part and that its properties are that of a lubricant (for most applications) makes this drilling mechanism the most durable allowed by physics.

Although the basic elements of this mechanism are similar to that used in the warhead-penetration enhancement mechanism, because this is a low-speed proposition, its mode of operation must accordingly be distinct. In this mechanism, the FeC60 alternates between being evenly distributed over the surface of the nose of the craft and forming spikes of as little as a single molecule of thickness (but perhaps several molecules in height) formed by highly focused electromagnetism. The propulsive system, situated primarily in the rear of the craft, would be programmed to work in tandem with the cutting mechanism.

Rather than applying constant force, the pulses of thrust are alternated with cutting actions so that the FeC60 material, after penetrating into another nanoscopic layer and softening it up, is retracted and the magnetic field is re-normalized just prior to a pulse of thrust being used to cause the now-flat nose of the craft to pulverize the already-weakened material one thin layer at a time. The cycle time would be about one millisecond for the spike formation plus another five milliseconds for thrusting. With each cycle of spike formation and thrusting, spikes would form in slightly different positions on the skin of the nose of the craft. While a traditional drill uses the same structure to cut and excavate, this drill acts only to compromise the structural integrity of tiny

thicknesses of material at one time, essentially liquefying it, enabling pulsed thrusts to push the craft through solid earth as if it were a fluid.

Conclusion

The conglomeration of these unique technologies brings a journey to the center of the Earth from the realm of fiction into the realm of plausibility, raising the prospect of first-hand observation of geologic processes that have thus far only been hypothesized. We could verify the theory of rare earth mineral concentration in undersea supervolcanic shafts caused by a saltwater-based natural fusion process, verify the theory of continual inductive heating of the Earth's core and once and for all debunk the erroneous notion still to this day taught in schools that the center of the Earth is hot because, "It hasn't had enough time to cool off yet."